



• Rubber Issue •

JAVANESE NATIVE cutting a sliver, known as "tapping," from the bark of a Hevea tree on a rubber plantation in Sumatra. Note the white cup at right near ground which catches the white "blood" of the tree as it flows for several hours to heal the wound inflicted. Where this No. 1 operation occurs in "all things rubber" was once a thick jungle.

CONNECTICUT INDUSTRY

DECEMBER
1934

We Hope This Winter Won't Be Like Last - - -

As evidenced in no uncertain terms in the three "shots" of the S. S. "Coastwise", taken last winter as she steamed up to the T. A. D. Jones dock in New Haven—ON SCHEDULE—after one of her many trips from Norfolk, Va. laden with 6,200 tons of coal. . .

Whether it is or not, the T. A. D. Jones' fleet of coastwise steamers, its truck fleet, its barges, its rapid handling equipment at the docks and its well organized service arrangement with the "New Haven", is your guarantee of a constant fuel supply (coal or oil) within 24 to 36 hours of your plant.

IF YOU HAVE EVER WORRIED OVER
YOUR FUEL PROBLEM BEFORE
YOU NEED NOT REPEAT
JUST CALL

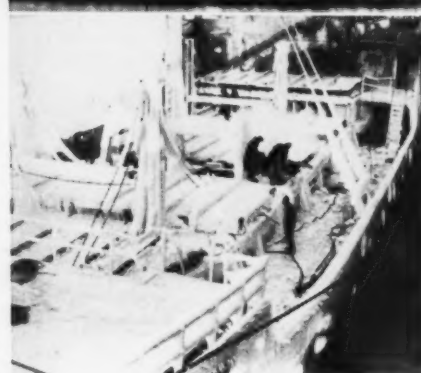
T. A. D. JONES & COMPANY, INC.

DOCKS

NEW HAVEN

BRIDGEPORT

NEW RIVER . . . NAVY STANDARD COAL . . . PENNSYLVANIA COAL
INDUSTRIAL FUEL OIL



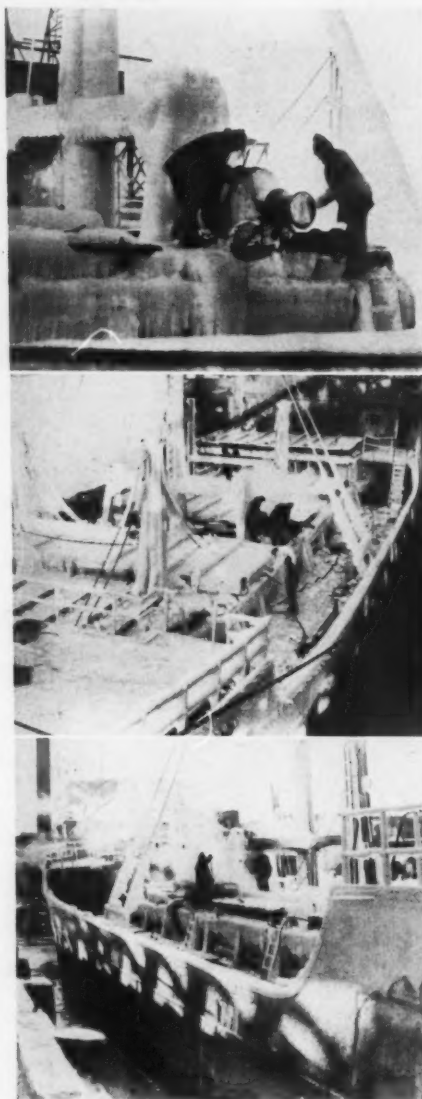
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OUR FUTURE IS ON THE RIGHT

On the eve of a new year, it is only natural to speculate on what is in store for business and the great body of our citizens.

With the President now in a more conciliatory mood toward business, the immediate future is brighter than for many months. The long-range view is, however, obscured by possible eventualities arising out of the action of law-making bodies at Washington and in the many state capitals. But on the premise that the future is largely controllable by the stage we set today, and the quality of the acting, let us look behind the scenes.

In the left wing are those, in and out of government circles, who advocate "eating the cake" in order to have it more abundantly. That theory, long continued, means a government playing Santa Claus until its resources are bankrupted, wherein the receiver pays twice for his gifts. This group have had their tryout, as illustrated by the orgy of government spending which has answered as a stop-gap but has missed the mark as a primer of economic reconstruction. Still failing to acknowledge defeat, many of these politically powerful spendthrifts would go "on with the show" of gifts for reconstruction by borrowing from future income which their very acts would prevent.

In the right wing and in the center are the great body of business men, some economists, millions of investors and thinking workers, many of whom are now unemployed. In their increasing vocal strength for a "holiday on experiments" lies the hope of re-establishing business confidence—an absolute requisite for a sound and sustained recovery movement.

During the ironing-out process between these two groups, much constructive thought and action will be required. Connecticut industrialists can make a vital contribution toward increased confidence and a brighter future for 1935 by adding converts to the ranks on the right.

E. KENT HUBBARD

RUBBER

By L. M. Bingham

A curious gift from Columbus to Ferdinand and Isabella; a wonder "elastic metal" to Daniel Webster; a queer torture to a bankrupt Yankee hardware merchant which he energetically endured for the benefit of mankind. . . . Exercised the Indians; helped the artists of the 18th century; kept President Jackson dry on a rainy day in Boston; lost millions for shrewd Yankee investors; made other millions since for John Bull and others who guessed right. . . . Now nearly a billion dollar industry in good years. . . . Industry first successful in Connecticut, and still is.

Editor's Note. This is the eighth in a series of articles telling of the romance of industries that have either had their inception in Connecticut or received a powerful impetus by the application of Connecticut Yankee ingenuity. This story falls in the latter group. But the manufacture of rubber products still remains an important industry in this state, despite its westward movement in the seventies.

A STRANGER walking through the jungles along the Amazon River during the months of January and February might be startled and run for cover as he hears one loud report after another, not unlike the sound of big-calibre rifle shots that often spell a South American revolution. When he outgrows his fright and begins to observe, he will find that the pods or the ripened fruit of the Hevea tree (one of the most important of four hundred species of tree and bush from which caoutchouc—French name for India rubber meaning "weeping tree"—is obtained) are bursting with loud reports, scattering their seeds as far as sixty feet. By successive cannonading of this sort over thousands, perhaps millions, of years, nature has lined the shores of the Amazon River and other semitropical parts of the globe not over thirty degrees on either side of the equator, with a heavy thick growth of trees which exude, when the bark is wounded, a milk-like sticky fluid, now called "latex".

When the natives first discovered it, and how, no one knows. But in an inquisitive moment, one gathered some of the milk, immersed a stick in it and held it over his smoldering campfire to

discover that it stuck fast to the stick, turning to a black, spongy-like substance. Repeating the operation again and again, he found that he had a mass of thick black substance which he removed to mould into different articles.

On his second trip, this time in search of gold, Columbus found the natives on the beach in Haiti playing a game of ball with this queer resilient substance. Luckless in his search for the precious metal, he took back a few of these balls, presenting them at the court of Queen Isabella and King Ferdinand as souvenirs of his fruitless trip. They aroused but mild curiosity, and he was thrown into prison for debt.

Other Spanish adventurers, treasure-bent, landed in South America in the early fifteen hundreds. Among them was Gonzales Valdes, who reported about an Indian game called "Batey", played with a gum ball. The "white man" knew nothing of the substance until La Condamine, a Frenchman, discovered it in South America in 1736, sending a sample to the Institut de France, together with the first accurate information about the "Hevea brasiliensis" species of the rubber tree. It still remained nothing more than an interesting curiosity until Priestly, the Englishman who discovered oxygen, named it "rubber" in 1770, when he found that the coagulated juice of the Hevea would rub out pencil marks. Artists then paid what is now equal to 75 cents for each chunk of rubber to use as erasers.

One year after Priestly's discovery, Samuel Peal, of London, spread the melted gum over cloth to make it waterproof, but it was never put to practical use because

of its sticky surface. The discovery, however, stimulated research. In 1820 Nadier, of England, had the bright idea of cutting the rubber sheets into threads and weaving them with cotton or silk threads to make elastic cloth—but no textile machine then available would perform the task. Then Charles Mackintosh, of Glasgow, Scotland, patented a process in 1823, by which he spread a solution of coal tar, naphtha and rubber on a marble slab, allowing the solvent to evaporate. The remaining thin sheet of pure rubber was sandwiched between two fabrics and sewed together, producing waterproof cloth. When he started his factory two years later to make waterproof coats, they were known as "mackintoshes". His garments are still known by this name.

Thomas Hancock, a mechanical-minded Englishman, who later



REPRODUCTION of portrait of Charles Goodyear—father of utility rubber—painted on hard rubber of his own making.

became a partner of Mackintosh's, gave some impetus to the beginnings of the rubber industry by devising the first mill machinery that would mix rubber with compounds to make it less sticky. He used fuller's earth, coal tar and certain color pigments, the latter to add beauty to the product. He was successful in a small way, making belting, packing, hose, shoes, inflated goods, and even moulded articles. Then McIntosh and Hancock collaborated, working out in 1831 a formula for making rubber varnish to coat cloth. It was rubber plus lampblack, dissolved in spirits of turpentine. Substantially that formula was responsible for starting the first ill-fated rubber boom in America, beginning in 1831.

The first rubber goods were brought to America, landing at the port of Boston, in the early 1800's (reports differ as to date)—all made by the Indians along the Amazon river in Brazil. The products were chiefly rubber shoes, powder-flasks, tobacco pouches and water bottles. Among them, shoes were most popular as they were found to be long-wearing and waterproof. For a time the demand was greater than the supply, at from \$3 to \$5 a pair. But the most important function of these crude importations was to stimulate the desire for a better and more diversified line of rubber goods.

Because a million pair of Para rubber shoes had found a market at high prices during the first fifteen years of crude rubber products importations, it was only natural that New England manufacturers should seriously consider the problem of rubber manufacture. A Mr. Chaffee, manufacturer of patent leather in Roxbury, Massachusetts, began to experiment to find a suitable rubber solution with which he could cover patent leather, to give it both a smooth and waterproof surface. In his experiments during 1831-32, Chaffee made the same discovery as Mackintosh and Hancock; that dissolving crude rubber in spirits of turpentine and adding lampblack produced a waterproof varnish of the desired color. Immediately he organized the Roxbury Rubber Company (1832-33)—the first rubber fac-

tory in the United States—and began the production of rubber-coated shoes, rubberized cloth, clothing and life preservers.

As in practically every new development, many other companies sprung up rapidly in New England and New York, enticing millions of dollars into the various enterprises. Excitement was rife as people visualized the possibilities of manufacturing and selling an infinite variety of products from a cheap and inexhaustible supply of fluid from millions of forest trees. Realizing the value of advertising, the managers of the company arranged to have President Jackson visit their plant when in Boston during the winter of 1834. They presented him with a suit of rubber clothes, which he wore that rainy day while riding through the streets of Boston on horseback. This clever publicity stunt greatly accelerated the interest in rubber production. So high did the investment fever become that the period is comparable with the excitement subsequently created over the discoveries of oil and gold.

But it was soon discovered that there were two troublesome qualities of rubber that men had not learned to control. Shoes softened into a formless mass of sticky dough when the thermometer reached 100°. Rubber clothing would stand alone; shoes became as iron in cold weather. Manufacturers worked desperately to stave off ruin, but the caoutchouc did not respond to their feverish experimentation. The first episode in rubber manufacture in the United States came to a sudden and calamitous end (for many of the investors) about 1838, with the closing of a rubber plant at Woburn, Massachusetts. But the misfortune of that seven-year episode stirred the honest curiosity and firmed the nearly fanatical determination of a Connecticut-born hardware merchant to discover a method by which crude gum-elastic could be transformed into innumerable objects of utility. That man was Charles Goodyear.

Father of Utility Rubber

Goodyear, son of Amasa Goodyear, was a descendant of Stephen Goodyear, one of the founders of

New Haven Colony. Born in New Haven, December 29, 1800, this religion-bent and studious youth aimed early to become a minister but lacked the means for an education. As a boy, he divided his time between school and helping his father with his small business of manufacturing pewter buttons, faucets, steel hay-forks and other hardware items carried on in a small factory in Union City, Connecticut. At seventeen he went to Philadelphia to learn the hardware business, returning to Connecticut four years later to become a partner in his father's business. In 1824 he married Clarissa Beecher, daughter of Daniel Beecher, then a leading citizen of Naugatuck. Prosperity soon encouraged young Goodyear to open a hardware store in Philadelphia (first retail hardware store in America), which thrived until the winter of 1829-30, when too many bad debts and a severe attack of dyspepsia ruined his business, forcing him finally to assign his property rights and certain patent rights.

The "poor debtor laws" of that day caused Goodyear to spend considerable time in jail immediately after his business went "on the rocks". Intermittently thereafter for ten years, he made frequent and detained calls on the jailers for debt. Sensing the high type of man he was, his jailers gave him much freedom. This permitted him to work on a few



MILLING machine which mixes crude gum with compounds that add necessary qualities to utility rubber.

inventions, one of which he perfected and sold for enough to support his family during his visit in the jail. There being no other means of livelihood open to him, because of his inability to raise money to start in business, he decided to become an inventor.

Rubber had come under his observation while he was a student in school. He was interested in it but had been too busily engaged at other tasks to make any attempt at solving man's difficulties with it. Now that he had no business or money and plenty of time, it occurred to him that he might settle with his creditors and retrieve his fortune if he could perfect a manufacturing process that would eliminate the sticky qualities of gum elastic so that it could be put to a wide variety of practical uses. So on his next trip to New York he visited the warehouse of the Roxbury Rubber Company and examined some of the goods, particularly the life preservers. His intelligent comments and suggestions for improvements caused the clerk to become confidential. He told Goodyear if he could find a way of preparing rubber so that it would not melt with heat nor grow stiff with cold, his company would pay a large fortune for his discovery. Inspired with the idea, Goodyear returned to Philadelphia determined to solve the rubber problem.

No sooner had he started on his search for methods than one of the many creditors of his old firm

had him jailed. Actually he carried on his first rubber experiment in this jail with a little lump of rubber and no tools but his fingers. The more Goodyear thought about the problem of making rubber indifferent to heat and cold, like leather, the more certain was he that Goodyear was the Messiah to work the miracle. His mental state at this time is revealed by his own writing: "I was blessed with ignorance of the obstacles I had subsequently to encounter, but soon learned that the difficulties attending the experimenter in gum elastic obliged him to await the return of both warm and cold weather at least twelve months, and often much longer, before he could know with certainty that his manufacture would not decompose. . . . I was encouraged in my efforts by the reflection that what is hidden and unknown, and cannot be discovered by scientific research, will most likely be discovered by accident, if at all, and by the man who applies himself most perseveringly to the subject and is most observing of everything related thereto."

His bold prophecy came true, but at terrific cost to his physical well-being and that of his family.

During his early experiments, he mixed his gum by hand (gum was plentiful and cheap then, after the partial collapse of the rubber industry), spreading it with a rolling pin lent by his wife. Soon his admixtures were applied to emboss cambrics, for which a fair demand was soon created. But stickiness persisted, which Goodyear thought was due to the turpentine solvent.

When finances permitted, he bought a few casks of gum, which he kept liquid by using alcohol only. He did not know what he was soon to discover—that the stickiness was an inherent quality of the gum and not the solvents. He found this out to the dismay of his "man of all work", Jerry of Irish extraction, who puttered with him on experiments and did other odd jobs for the Goodyear household. When the first casks of gum were rolled into the Goodyear premises, Mr. Goodyear was called away for an hour or two. Jerry, who had acquired an experimental turn of mind from his

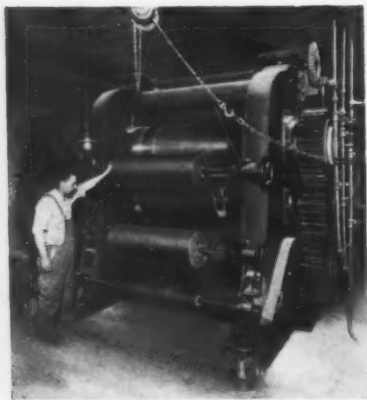
master, decided to get acquainted with the liquid gum. He painted his trousers with a heavy application. On Goodyear's return, he found Jerry a prisoner at his bench, with his legs stuck together as in a vise. Only after a generous application of shears was Jerry again a free man.

By this striking example, Goodyear learned a valuable lesson, and thereafter his experiments were aimed at changing at least the outward qualities of rubber. He wondered at the time what would happen to several hundred pairs of handsomely moulded shoes which he had made in the fall. A single hot day the next summer answered his question, for he discovered on his shelves, instead of the shoes, a formless mass of sticky dough. Although he was a confirmed optimist to the point that a 1934 modern would call him a "nut", he was somewhat chagrined at the fate of his shoes. So were his friends, who had been touched by his palpable stories of "hidden wealth in rubber". Many of them withdrew their support at this juncture.

Not the least daunted, he sent his family to the country, where his wife supported them largely on the linen she spun and sold. Goodyear hied away to New York, where he chiseled a room on Gold Street with a friend, John Sexton, and sold a good natured druggist, Silas Carle, on the idea of furnishing him with all the drugs he required.

His thoughts, his dreams, his excited gesticulations were all centered around his many ideas of what he chose to call "tanning" rubber to make it behave like leather. He tried a marriage of magnesia with gum elastic, which, after boiling, banished surface stickiness. From the compound, he made a few thin sheets and ornamental articles, and received prizes for them at the fairs of the Mechanics' and American Institutes. But the magnesia or lime-water process was vulnerable to acids, no matter what strengths he used. The strongest solutions produced rubber of little strength and elasticity.

One morning after boiling in a weak solution of lime-water, a piece of gum elastic ornamented with bronze, he discovered that



CALENDAR giant that performs the "marriage ceremony" between mixed gum and woven cotton fabric.



VULCANIZING steam pits where tires are cooked at high temperatures in large steel molds. Tread formed when melted rubber enters "engraved" forms inside of mold.

part of the bronze had been washed off. To remove all traces, he used some nitric acid, which immediately darkened the gum. Impatiently he threw it away as spoiled. But his mind, accustomed to observing the slightest detail, dwelt on the shriveled-up, dark piece of rubber which he had discarded. Two days later he paved it out of a rubbish heap to discover that wherever the nitric acid had touched, the stickiness had vanished. Within a week he was producing thin rubber cured through and through. Patterned with pleasing designs, it was sold in the form of aprons and table covers. To help with the family expenses, his wife rescued the scraps and dovetailed them into bonnets, which she and her daughters wore to church.

The market for his acid-gas treated rubber products became sufficient to attract the interest of William Ballard of New York. Ballard furnished the money to form the firm of Goodyear & Ballard, which started manufacture on Bank Street, New York, and later on Staten Island. But the panic ruined their business in 1836; so much so that Goodyear, traveling to New York from

Staten Island one day, pawned his umbrella to the ferrymaster (afterward famous as Commodore Vanderbilt) to pay his fare.

Again in such reduced circumstances that his family stock of tableware had dwindled to little more than a few cups which, by turns, held weak tea or mixtures of rubber gum, he resumed making tablecloths for which the demand dwindled to zero. Desperate for food as the family cupboard went bare, his pockets empty, he set forth with a treasured keepsake toward a pawnshop. On the way he met a creditor whom he dreaded to see. Much to his surprise, the creditor said, "What can I do for you?" After Goodyear convinced himself that the offer was valid, he made a request for \$15, and got it. Two weeks later he had to visit the pawnshop with his treasured keepsake. After every valuable thing which he and his family possessed was offered up to Goodyear's "god of rubber", he borrowed \$100 from James De Forest, his brother-in-law. While this money was being dissipated in meagre living and for necessary experimental accessories, which he worked with every day and far into the night, he traveled to Roxbury, Massachusetts, with some of the best samples of his wares. There he met Harry Willis, who had been a fellow apprentice while he was learning the hardware business in Philadelphia. Although Willis treated him most hospitably at his home, Goodyear had to return to New Haven without interesting any one in his samples or his ideas of making a fortune out of rubber. Too many people had been the victims of the rubber bubble to be ensnared again.

So in the fall of 1837 and 1838, Goodyear began in New Haven making overshoes of an improved quality. He patented the improved method, selling licenses for the process, which again cleared his financial skies for a time. Then he met Nathaniel Hayward, who had been a foreman at the defunct plant of the Eagle Rubber Company at Woburn, Massachusetts. Hayward then having little else to do was permitted to use the vacant factory to satisfy his appetite for experimentation. In a

dream, he claimed that he had been told to combine sulphur with gum and expose it to sunshine. The result was rubber freed from all stickiness, with a surface seemingly well cured and tanned. At Goodyear's suggestion, Hayward's idea was patented and Goodyear bought it, chiefly with notes (never paid) and a licensing arrangement.

With this new patented method, Goodyear thought that he was again on the right track. He made thin rubber products, using the solarization method of curing after compounding sulphur with gum. But he was soon to discover that his horn of plenty was, after all, only a "wolf" call. He had received an order from the United States government for waterproof mail bags, which he made with all haste, noising the order abroad as any good propagandist would do today. Since the bags were made in the summer, standing up successfully, Goodyear felt quite certain that they would continue to keep their shape. But as a precaution he hung them up for a long test before shipping them to Washington. Almost at the point of exhaustion because of his feverish efforts, he decided to take a vacation. To his complete dismay upon returning, Goodyear found the mail bags on the floor in a state of malodorous decomposition. Then his entire season's production of life preservers, cushions and other heavy goods was returned to him by his disgusted purchasers in the form of refuse.

Although downcast and broke again, Goodyear still refused to be turned back into the hardware business as a means of a certain livelihood for his family; this despite the stern admonitions of his friends and the extreme poverty that forced his ageing father and mother, who shared his home, to be deprived of the scanty comforts so sorely needed at their advanced age.

With unabated ardor and diligence, he again set himself to the task of discovering his past errors, with a view of retrieving his lost reputation. While on a visit to Woburn, Massachusetts, in the winter of 1839-40, Goodyear carried on experiments at his dwelling place, to ascertain the effects of heat upon the compound that

had decomposed in the mail bags. Engaged in animated conversation with his brother regarding the properties of gum elastic, a piece of rubber he held in his hand fell on the hot stove. To his great surprise, instead of melting (as rubber always had done before at a low degree of heat), it became charred like leather, no portion of it being sticky. Exposing the piece to the intense cold for the remainder of the night, he found it in the morning as flexible as it was when he put it out. He knew that he had made his most important discovery, which was later called "vulcanizing" by an Englishman, who named it after Vulcan, the Roman god of fire.

But Goodyear's troubles were still legion. He had to find out how much heat to use and the proper combination of chemicals to compound with the gum to bring about a satisfactory result in finished products of varying types. His first successful experiment in vulcanization was carried on with the aid of a hot fire in the fireplace of his own bedroom, before which he roasted a square yard of rubber goods. Being a believer in advertising the success of his wares, he made himself a rubber vest, coat, cap, shoes and purse, and wore them boldly everywhere he went, again attempting to find money to back further necessary experiments. A man

once asked an acquaintance of Goodyear's how he would recognize the inventor when he met him. Quickly replying, the acquaintance said, "If you meet a man who has on an India rubber cap, coat, vest and shoes, with an India rubber purse in his hand without a cent in it, that is he." Goodyear had fooled people with too many false starts. They were tired of him and his fool ideas.

Only charity and faith in ultimate success kept him and his gaunt and dyspepsia-racked body in the running for months at a time. During the five years prior to the granting of his patent papers for the vulcanizing process in 1844, Goodyear experimented and carried on some manufacture of products in Springfield, Woburn, Boston, New York and Naugatuck. He tried steam as a vulcanizer, and many different combinations of chemicals which he compounded with gum; each time having to wait a considerable period for results. One after another, he overcame each new difficulty with painstaking effort, securing the money to do it through more of his good salesmanship to his brother, a man named William Rider of New York, and his brother-in-law, William C. De Forest, who later lost \$40,000 to \$50,000 before himself becoming a bankrupt. (More about De Forest under the story of the oldest rubber company in existence—The Goodyear Metallic Rubber Shoe Company of Naugatuck, Connecticut.)

After his patent was granted, he enjoyed intermittent periods of prosperity, at one time paying off his entire indebtedness of \$35,000 with the receipts from licenses he issued to manufacturers producing under one or several of the sixty patents he acquired during his lifetime. Often dilatory in filing his patents, keeping account of his royalties (3¢ per pair in the case of rubber footwear), and watching patent infringements closely, he received only a fraction of the income which should have been his. In the case of vulcanization, his patent was not received until five years after his first discovery, entirely due to his desire to incorporate all new claims arising out of his resultful experiments. And thus it came

about that Thomas Hancock, a partner of McIntosh & Company of London, discovered Goodyear's process and patented it in England before the dilatory Goodyear.

In 1851 Goodyear received considerable renown by exhibiting a striking display of his products at an International Exposition at London. He was especially commended for his hard rubber products, which he and his brother Nelson had perfected. One of the five council medals coming to the United States was also awarded him.

In 1852 the case which Goodyear had brought against Horace H. Day, an infringer of his patents, reached the United States District Court at Trenton, New Jersey, with Daniel Webster arguing his last case and winning the verdict for Goodyear. Webster's fee was \$10,000 (other reports claim \$25,000). To pay it, Goodyear was forced to make an agreement with a number of his licensees whereby he would lower his royalty from 3¢ to 1/2¢ per pair of shoes in exchange for their financial aid in paying the legal fees.

Within a few months after the close of his successful case, Goodyear, accompanied by his family, took passage for Europe in the interest of his rights there and to promote the manufactures which bore his name. Broken in health from almost torturesome rigors through which she had gladly passed to aid her husband to success, Mrs. Goodyear grew steadily worse after landing in Europe. She died in March, 1852. The following summer Goodyear married a Miss Fanny Wardell of London.

To emulate the example of London, Paris held an international exposition surpassing in grandeur and size that of the British metropolis. In keeping with this grandiose affair and his utter lack of business sense, Goodyear set up a palatial booth, exhibiting every known product of vulcanized rubber at a cost of \$50,000. This extravagance, plus the crookedness of an agent, emptied his purse and piled up debt that caused him to be jailed near Paris. Securing a release soon afterwards, he rushed to England in an attempt to stop certain bold infringers on his patents. But he had scarcely left the



PORCELAIN forms on which rubber gloves are built up by successive dipping.

dock when he was nabbed on a charge originating in Paris. Despite offers of bail, Goodyear declined and went to jail, claiming that the claim was fraudulent. This fact he later proved in court and was honorably discharged.

Climaxing 25 years of legal and financial strife, Goodyear's disease-racked body broke under the strain. Near death for many weeks, he recovered enough under his wife's skillful nursing to travel to Bath, where he remained for nearly two years prior to embarking for the United States in May, 1858. Because ill health prevented him from attending to business, he was forced again to frequent a pawnshop—this time with his wife's jewels as well as his own. To add to his misery, many of his licensees utterly ignored their contracts with him, and his trusted attorney took further advantage by embezzling a large sum.

Once back in America, his patients were renewed for another seven years and his other affairs were brought into better form. For once in his life, he thought to have peace without financial or legal worries. He made a home in Washington, D. C., which, inventor-like, he fitted with a tank for testing models of life-saving apparatus. Goodyear had always bemoaned the loss of life at sea and had spent more time attempting to improve this item than any other, and it was natural that he should want to spend his remaining days in improving that which interested him most.

But one morning as he experimented, less than two years after establishing his home, word came that his daughter in Connecticut was at the point of death. Although in no physical condition to make the trip, he thought more of saying farewell to his daughter than of his own welfare. Reaching New York, he broke down with sheer exhaustion, taking rooms in the Fifth Avenue Hotel, where he received word of his daughter's death. That he should have been denied the opportunity of seeing his daughter was the blow that spent the last vestige of his waning energy. As the bells called to worship on Sunday, July 1, 1860, he passed on.

Nowhere in the annals of business history is there recorded the story of a man who was more persecuted, suffered more, gained less, and gave a better demonstration of the power of a dynamic will over an ailing physical equipment, than that of Charles Goodyear. Over a period of 29 years, single-handed with the exception



TIRE building operation by hand.
Tire is built up layer by layer over a mold.

of one or two collaborations, his experiments had alone paved the way for the establishment of an industry which once closely approached the billion-dollar mark in value of annual production. In his experiments he had touched every branch of rubber production except one—the rubber tire. Always a poor business man and a worse credit risk, he spent extravagantly when he had money but often overlooked his creditors even when they were in dire straits. Ofttimes, with indignant ire in the sense of moral rectitude, he would rebuff his creditors who had the temerity to remind him of his debt. He felt that his contribution to mankind far exceeded theirs; that their contributions had gone for a good cause. Only by the code by which geniuses are measured can Goodyear be justly appraised. Nothing but death quenched his burning desire to improve the lot of mankind by discoveries to perfect the manufacture of rubber.

Other Developments

Nathaniel Hayward, whose

patent on the sulphur process (1838) was sold to Goodyear in exchange for notes, certain manufacturing rights, and a re-licensing privilege, worked for a time with Goodyear when the latter had the means to pay him. Later he manufactured on his own account in Woburn, Massachusetts, and still later in his own plant, the Hayward Rubber Company, in Colchester, Connecticut. This concern was later absorbed by the United States Rubber Company.

Strangely enough, as previously mentioned, America's chief experimenter in rubber—Charles Goodyear—had overlooked its most important application to the tires of vehicles, as first invented and patented by Robert William Thompson, of England, in 1845. But despite the quality of Thompson's tires, which were essentially the same as those used on bicycles and automobiles 'up until 1910, these "aerial wheels" (as they chose to call them) merely excited oh's and ah's of wonderment and were 40 years ahead of popular acclaim.

By 1868 hard rubber tires encircled many of the wheels of tractor engines in England, and gradually thereafter were placed on buggies, stagecoaches, and bicycles. Then came the Dunlop pneumatic tire in the late 1880's (the invention of John Boyd Dunlop, a veterinary surgeon of Belfast, Ireland, who made the first ones for his son's tricycle that he might win a race), which became standard in the United States by 1904.

Although somewhat foreign to our story, which treats principally of the impetus given to the rubber industry by Connecticut men, its previous discovery and application, it is, nevertheless, of interest to know that the first trek of the industry westward was brought about through the desire of a real estate operator to recoup his losses in a defunct New York rubber company, rather than a movement caused entirely by the mid-western location of the automobile industry. The latter was subsequently the cause of the great expansion of the rubber industry, chiefly in Akron, Ohio. Mr. Benjamin Goodrich, a real estate operator who had become involved in the Hudson River

Rubber Company of Hastings, New York, which failed around 1870, became so much interested in the future of rubber that he decided to make it his vocation. Going west seeking capital to revive the old company in which he had a considerable investment, he landed in Akron, Ohio—sold himself and the idea of financing his rubber company to the chamber of commerce. From the small start made that year with the old Hudson River Company equipment set up in a brick building 50' x 100', has grown the Goodrich Rubber Company.

From Source to Consumer

Presumably a woodpecker, or some wild beast, first tapped the bark of the Hevea tree, causing its protective fluid, in the green surface cells to flow freely and come to the attention of the natives of the Amazon River. It is a tree that sometimes grows to a height of 100 to 150 feet and reaches a girth of around 6 feet, being devoid of branches to a height of 30 to 40 feet. It produces an edible nut, has the unique property of renewing its bark after the original has been removed, and is valuable as a source of hardwood for building purposes. Although it thrives best in areas of heat and 80 to 100 inches of rainfall annually, it is sufficiently hardy to stand a reasonable drought and mild frosts. There are nearly 400 other species of trees and plants that give forth the sticky "latex" as protective fluid, but from the standpoint of rubber content, the Hevea species is the most productive, averaging slightly better than 30% actual rubber content. Lowest in the scale of rubber producers is our own milkweed, so low in rubber content as to make prohibitive the cost of extraction.

The first and best source of crude rubber was the Amazon River regions in Brazil, where millions of Hevea trees grew wild and were tapped by the natives. But the great difficulties such as loss of life and the high cost of an ever-increasing supply that accompanied a growing rubber industry, caused an Englishman, Lord Salisbury, to advocate expeditions into Brazil for the purpose of securing a large number

of seeds to start rubber plantations. Of the three expeditions sent to Brazil, the one headed by Henry W. Wickham was most successful, gathering 70,000 seeds, all unknown to the Brazilian government, which had passed a law forbidding exportation of the



B-RR-RR-R. She never expected to be on display in a 1934 rubber bathing suit in a December magazine issue.

seeds. Twenty-eight hundred of these seeds germinated into seedlings, of which 2,000 were planted in Ceylon. In 1881, when these trees seeded, they were distributed to Java, the Federated Malay States and Burmah. Now well over a billion trees are under cultivation "east of Suez", and millions more in Mexico, Central America, South America, and Africa although only a small percentage of the cultivated crude rubber comes from the latter four countries. Now less than 10% of all rubber used is wild rubber as against almost the exact reverse of the situation in 1900, when 53,890 tons of wild rubber importations constituted nearly the entire domestic requirements. Instead of being a monopoly of Brazil, the honors in crude rubber production now go to Great Britain. Of the U. S. companies that have tried their hand at cultivating successful plantations, the United States Rubber Company stands at the head of the list with its 12,000,000 producing trees and 2,000,000

more attaining the required tapping maturity in Sumatra. Annual production of slightly over 50,000,000 pounds is sufficient to supply about 1/3 of the company's requirements. The full story of plantation life is too lengthy to be told here but is well done in Fortune magazine for February, 1934.

Tree tapping is an art which the natives, especially of Java (the best plantation labor in the East) readily acquire. Instead of boring holes, the tapping is done with a special curved knife (see front cover photo) with which a diagonal groove is cut starting about 3 to 4 feet from the base extending down and around about one third of the tree's circumference. At the end of this line or groove a cup is attached to catch the daily production of the tree. Each day (tree tapping every other day is most frequent practice) the coolies start out early (about 5:00 a. m. in Sumatra; other places tapping is done at night, gathered in morning) tapping trees by cutting another strip of bark a small fraction of an inch in width, and by ten o'clock start the round of tapped trees, collecting the "latex" in cans. The day's work is done around noon when all of the milky fluid has been delivered and weighed up at the processing plant. Here it is weighed and quickly placed in shallow pans about 18 x 24". One drop of acetic acid sours the mixture (66% water, 2% foreign matter and 32% rubber) causing the liquid to coagulate with the rubber, gathering on top. It is removed from the pans, squeezed through wringer rolls, washed, mangled dry and hung up to be smoked like ham. (Methods differ with grades desired and locale.) Packed later in cases, it is shipped to the rubber factories of the world.

There are also two other methods used to prepare the "latex" for the market, both of which are used by the U. S. Rubber Company plantations. One is to chemicalize the "latex" to preserve it while it rides in tanks on ships and railroad tankers to the domestic market for various uses. The other known as the spraying system, is to pour the latex slowly onto a flat revolving disc, and as it flows off jets of hot air evaporate the water leaving the rubber

to drop in flakes until they pile up in a doughy heap. Pressed into bales, it is then ready for shipment.

Reaching a rubber factory, the processes are generally as follows: (1) Bales split by large hydraulic presses; (2) Washing done by a large two-roller cracker, washer and sheeter; (3) Dried in long sheets at temperatures of 110° to 120°; (4) Massing—done by a machine with two large rolls which mix and blend the rubber; (5) Milling and compounding—mixing with compounds in a large milling machine and turning out into sheets (called "mixed gum").

If the rubber is to be used for tires, tubes or the majority of items made from flat stock, it will be "calendered" by running the heated rubber onto cotton fabric and passed through rollers until the whole is a rubberized sheet of the thickness desired. From these sheets pieces are cut to the desired size and shape for the articles to be produced. Tires, waterproof fabric, hospital sheeting, sheet packing, etc., are made from calendered stock.

Other products are made by dipping forms in a solution of rubber dissolved in naphtha; after which the solvent is allowed to evaporate, leaving a coating of rubber on the form which is "cured" in ovens. Rubber gloves, nipples and toy balloons are examples of "dipped goods".

Blown goods such as balls and bulbs are made by roughly forming the article, with a chemical inside and placing in a mould. When it is subjected to heat a gas is formed which inflates the article so that it takes the exact form of the mould.

Hot water bottles, many kinds of mechanical rubber goods, floor tiling, etc., are made by the so-called "moulded process". By this method sheets or chunks of rubber are placed in moulds and subjected to the action of heat and pressure until the rubber takes the exact form of the mould.

Hard rubber is made from compound with an extra amount of sulphur (vulcanizing agent) in it and then molded to desired shapes.

Extruded goods are made by feeding rubber compound of a doughy consistency through a

machine resembling a large meat chopper and forcing it out the side through a die into a continuous length. Tubing and rubber band stock are examples.

Regardless of the process, "vulcanization" or "curing" must enter into the process of manufacture after the goods have been formed. For the most part this cure (making permanent the good qualities of rubber which give it wide commercial acceptance, such as elasticity, toughness and impermeability) is accomplished by the application of steam heat to the product in an air-tight vulcanizing chamber. One of several exceptions to this rule is the treatment of bathing caps, which are immersed in acid—sulphur solu-



SPONGE rubber will spring into practically any form the imagination can create. Above a few rubber toys made of it.

tion. Another is the sulphuric vapor cure as used to cure surgeons' gloves.

Sponge rubber is a comparatively new type of rubber (about 12 years old), adaptable to thousands of new uses. It was so named because of its resemblance to a sponge in appearance and action under "pressure and release". The preparation of the crude rubber is exactly the same for sponge rubber as it is for other rubber up through the calendar stage, with the exception that it is compounded with a different mixture of chemicals, chief of which is baking soda. The flat calendered sheets are placed in an oven and baked. The heat causes the baking soda to form a gas which makes the rubber "rise" like a cake. After baking for the proper length of time under a controlled temperature, the com-

pound turns to sponge-like mass with a crust on the outside and dotted with small pores on the inside. It is then sliced to the proper thickness and cut into forms for assembly into various products.

The uses for sponge rubber are practically unlimited since new uses are constantly being found for it. A few are: sponge rubber play balls, bath mats, soap dishes, rubber sponges, chair cushions, operating table mats, kneeling pads, upholstery filler, rug cushions, wash cloths, exercisers, toys, etc.

Editor's Note: Following are brief historical sketches of the principal Connecticut companies fabricating finished rubber products from crude rubber.

The United States Rubber Co. in Connecticut

The story of United States Rubber Company starts with the merger in 1892 of a group of the largest and oldest rubber footwear companies in the country into a holding company. Among the fifteen companies which originally entered the merger only three still retain their identity among the subsidiaries, as follows: Goodyear Metallic Rubber Shoe Company, Naugatuck, Conn. (established in 1843 and the oldest surviving plant operated today under a license from Charles Goodyear); Goodyear's India Rubber Glove Mfg. Company, Naugatuck, Conn. (established 1844 also being an original Goodyear licensee); American Rubber Company, East Cambridge, Mass. (established 1874). At this late date "it can be told" that the U. S. Rubber Company was the outgrowth of a rubber association which fixed prices. But when the Anti-Trust Acts came along on the end of "T. R.'s" big stick, a number of companies sought shelter and freedom under a corporation roof.

Until 1895 when a single sales organization and branch store system was inaugurated, each company operated as a separate entity. In 1904, the General Rub-

(Continued on page 19)

Mac's Philosophy

RECKON if industry got a big bundle of "confidence" in its sock, it would do a lot more good than Santa, besides relievin' him of most of his heavy load.



CLIFF KNIGHT

NEWS FORUM

Business Up With Safety Car. Increased demand for the modern type railway cars has brought into the lap of the Safety Car Heating and Lighting Company of Hamden, Conn., orders for air conditioning about 250 railway coaches, with good possibilities for more. Because of the greater power requirement under air conditioning, Safety Car often gets orders for new generators to be installed at the same time with the Carrier Corporation air conditioning equipment.

The company has recently developed a more economical type of air conditioning duct for use when installing equipment in old type cars. Safety Car is said to have one of the best financial records in the entire railroad equipment industry during the past five years.

★ ★ ★

Death of L. A. Jenkins. Leonard Abbott Jenkins, well known industrialist of New Haven, died almost instantly at his home, 459 Whalley Avenue, on November 1, of a heart attack. Mr. Jenkins was vice-president of the Budge-It Corporation, manufacturers of cleaning fluids at 312 State Street, New Haven, and also maintained an office in the Union and New Haven Trust Company Building.

Prior to his connection with the Budge-It Corporation, he was vice-president, secretary and general manager of the Kolynos Company, large manufacturers of dental cream. His father, Dr. N. S. Jenkins, D.D.S., one-time personal dentist to Kaiser Wilhelm, was the founder of the Kolynos Company, which was later sold to the present operators. Mr. L. A. Jenkins was a graduate of Yale in the class of 1887 and was secretary and also class agent of the Yale alumni fund. He was a member of the Graduates Club, Yale Alumni Association, Quinpiack Club, Kiwanis Club, New Haven Country Club, Yale Association of Class Secretaries, Yale Club of New York and the University Club of New York.

Surviving him are his wife, Delphine Fielding Jenkins; a daughter, Mrs. Jefferson Cralle (Helen Elizabeth); and two sons, John Francis Jenkins and Newell Owen Jenkins.

★ ★ ★

Gray Declares Dividend. A dividend of \$1 a share, payable November 15, to stockholders of record October 29, was recently declared by the directors of

the Gray Telephone Pay Station Company. Distribution amounts to \$150,000, the first payment made since last spring when 35¢ a share was paid.

The action of the Gray Company against the Western Electric Company is now proceeding, an answer being made to the bill of complaint by Western Electric. The case will be placed eventually on the calendar for trial in the United States District Court in Chicago.

★ ★ ★

Deeds in Moscow. Charles W. Deeds, newly elected president of the United Exports Corporation, a recently created subsidiary of the United Aircraft Corporation, is at this writing in Moscow conferring with Soviet officials regarding orders for aircraft equipment. As head of the new corporation, Mr. Deeds has complete charge of export sales for the Pratt & Whitney Aircraft Company, Chance Vought Corporation and Hamilton Standard Propeller Company.

★ ★ ★

Hook to Report to Industry Congress. James W. Hook, president of the Geometric Tool Company of New Haven, will render a report dealing with the NRA at the Congress of American Industry which convenes at the Waldorf-Astoria Hotel in New York City on December 5 and 6. The report will represent the views of a committee of the National Association of Manufacturers of which Mr. Hook is chairman, on future relations of government to business. Other Connecticut industrialists who make up the committee sponsoring the congress of industry are S. M. Stone, president of Colt's Patent Firearms Mfg. Co.; A. C. Fuller, president of the Fuller Brush Co., Hartford; and F. R. Hoadley, vice-president of the Farrel-Birmingham Co., Ansonia.

★ ★ ★

Burt Renamed Chamber Head. Clayton R. Burt, president and general manager of the Pratt and Whitney Company, Hartford, was re-elected president of the Hartford Chamber of Commerce at a meeting of the directors of the Chamber held Tuesday evening, October 30.

Other officers re-elected were: vice-presidents, Edward N. Allen, Samuel Ludlow, Jr., and Kenneth P. Applegate. Lester E. Shippee, vice-president of

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the Hartford-Connecticut Trust Company, was named treasurer, Charles B. Whittelsey, executive vice-president and Florence G. Farrell, secretary.

New Industry for New Haven. According to recent reports, the Clare Knitting Mills, now located in the Bronx, N. Y., has been induced to make New Haven its home. It is understood that the company has signed contracts for floor space in the R. N. Bassett Building, the first three floors of which are now occupied by the Wire Novelty Company, the Derby Pressed Steel Company and the Empire State Novelty Company.

The new company will make knitted garments for women, and will, according to Mr. William E. Sheehy, Jr., president of the New Haven Chamber of Commerce, employ about 150 persons.

This is the fourth new concern to make New Haven its home during the past year.

Broad Brook Executive Retires. Harry Brook of 147 Tremont Street, Hartford, president and general manager of the Broad Brook Company, woolen manufacturers of Broad Brook, Connecticut, has recently sold his interest in the concern to a group including William Wiese of New York City, a large stockholder and selling agent of the company. Mr. Brook has completely withdrawn from all company affairs after 31 years of association with the concern of which his father was president and general manager preceding him.

He gained his education at a textile school in Huddersfield, Yorkshire, England, starting his business career almost immediately afterwards. He became president of the company in 1919, after the death of his father the previous year.

Chief products of the Broad Brook Company are automobile upholstery fabrics, suit and overcoat materials.

Control Changes at Omo. Control of the Omo Manufacturing Company in Middletown, Connecticut, manufacturers of dress shields and rubber specialties, has just been acquired by Brooklyn, N. Y., manufacturers who are engaged in allied production. The new owners plan to gradually remove their business to Middletown and expand operations to the point where approximately 200 persons will be employed.

Waterbury's First Citizen. In an article entitled, "Yankee Brass," recently appearing in Time Maga-

zine, high praise is given the management of the Scovill Manufacturing Company, terming its president, Edward Otis Goss, as "Waterbury's first citizen and a peer in the Connecticut industrial realm".

Provocative of the article was the success which Kidder, Peabody & Co., stock brokers of New York, experienced with an \$8,000,000 issue of the Scovill Mfg. Company's bonds. In typical Time pith, the news story circumscribed Scovill history. Of the present management it says in part, "Present head of Scovill is Edward Otis Goss, an affable, hard-headed Yankee of 69 who is Waterbury's first citizen and a peer in the Connecticut industrial realm. Below him are four Goss vice-presidents, most important of whom is his brother John, Scovill's general manager. And below the official Gosses are countless lesser Gosses learning the business."

Death of C. B. Jacobs. Charles B. Jacobs, 64, metallurgist and inventor at the American Brass Company, Waterbury, died at the Waterbury Hospital of pneumonia on October 18. Mr. Jacobs, prior to his association with the American Brass Company, had worked with such noted scientists as Steinmetz and Pupin and had secured numerous patents of metal process materials. He was the inventor of "Evadura" and "Alundum" metal and for the latter work receiving the John Scott medal in 1914 from the Franklin Institute of Philadelphia. He was also awarded the silver medal at the Louisiana Purchase Exposition in 1904.

Companies with which he was connected prior to his association with the Waterbury company were: The Norton Company, Worcester, Mass.; the General Electric Company, Schenectady; Crocker and Wheeler Company and the duPont Company. He also had his own laboratory in New York for a number of years.

New Post for F. S. Chase. F. S. Chase, president of the Chase Brass & Copper Company of Waterbury, was recently made vice-president of the Copper and Brass Research Association at the Fourteenth Annual Meeting of that body held in New York on October 31.

Interest Rate to Drop. On and after January 2, 1935, interest rates on savings accounts in Connecticut banks—mutual savings, state banks and trust companies—will be restricted to not more than 3%. Notice to this effect has been sent to all



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banks by Bank Commissioner Walter Perry, who has seen fit to make this move in the interest of sound banking.

★ ★ ★

Group Insurance Growth. Families of nearly five million American workers are protected by \$8,912 million of group life insurance against the death of their wage-earning member, according to a report "Recent Developments in Industrial Group Insurance" just published by the National Industrial Conference Board. Insurance is in effect through nearly 30,000 group life insurance contracts now existing under which employers and employees co-operate to protect the families of employees against suffering and want upon the death of the family wage-earner. In addition, more than 505,000 employees are protected to the extent of \$744 million by group insurance of the accident type, and nearly one and a quarter million are protected against the hazards of sickness to the extent of \$16 million in weekly benefits. Nearly 200,000 workers are assured a retirement income through more than 200 group annuity policies providing for monthly incomes after retirement aggregating more than \$8 million.

Workers covered by group life insurance, numbering nearly 5,000,000, are insured for an average of \$1,828 each. Averages for other groups are as follows: 5,000 are insured for an average of \$1,473 against accident and dismemberment; 1,229,000 covered by group accident health insurance are entitled to an average of \$13 per week in benefits; nearly 200,000 in annuity plans will receive after retirement an average income of \$43.53 per month as long as they live.

Sales of group life insurance for the first five months of 1934 were almost twice those of comparable months in 1933.

★ ★ ★

Oppose Widening Housatonic. At a hearing held in Milford on November 22, to review reports and sound out opinion on the deepening of the Housatonic River channel the great majority, representing organized groups, registered opposition on the grounds that federal funds should not be spent for such a project when there was clearly no hope of an adequate return on the investment. The reports presented arose as a result of House Document 449 as submitted in the second session of the 70th Congress, which proposes that the channel be dredged to make it 18 feet deep and 200 feet wide from

the mouth of the river of Culver's Bar at an estimated cost of \$495,000. The present channel is 7 feet deep at mean low water.

Outside of the organized groups very few of the approximately 150 in attendance offered testimony. The only ones in favor were certain individuals who apparently owned industrial sites along the river, and chose to stress that river improvement would do away with swamp lands which are now infested with mosquitoes.

None of the three largest industrialists located on the river—Sikorsky Aviation Corp., Gulf Refining Co. or Connecticut Light & Power—were represented.

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Copy for listing in this department must be received by the 15th of the month for publication in the succeeding month's issue. We reserve the right to refuse any listing.

DEPARTMENTS

Accounting Hints for Management

Contributed by Hartford Chapter N. A. C. A.

Depreciation as an Expense. The form of operating statements published by many corporations concludes with the statement of operating profit (or loss) "before providing for depreciation, taxes," etc. This phraseology, or form of presentation, is apt to convey an impression that the consideration for depreciation of plant, buildings and equipment employed in production is a discretionary matter. While it is true that in most instances it does not involve an immediate cash outlay during the current period, it is a fallacy to regard provision for depreciation as an optional expense. As a matter of fact there are many instances where current financial provision must be made to amortize bonds or other installment obligations which were issued in connection with the acquisition of the very facilities involved.

It does not appear logical to regard depreciation under present day industrial operating conditions in any other light than as a regular expense. Equipment and facilities for production together with premises to house such equipment are equally as essential as the power required to run the equipment, the labor employed, and the materials from which or on which the processing operations are performed. Equipment and facilities are not expected to last forever, but have limited life or periods of serviceability which can be estimated with reasonable accuracy. It follows, therefore, that proper provision for the use of equipment, to compensate for its diminishing value should be equitably prorated over the goods produced, and definitely considered as one of the factors or costs of producing same.

Granting this conclusion, it is apparent that the various costs and expenses applicable to certain production are concurrently applicable to the product as it moves through various processes or operations. It cannot be inferred that the sales price realized represents the recovery of certain cost factors ahead of any others. For this reason the depreciation expense or provision should be embodied in operating statements at the same point or in the same section as other costs, i. e., labor, materials, power, etc.

The supplemental deduction for taxes as referred to in the first paragraph, should relate only to income taxes, and this is properly segregated as a deduction, rather than as an expense. This view will be readily grasped when the theory of such taxes is considered. Income taxes are deemed to be the allocation to the Government of a portion of the net income (subject to statutory definitions) of the taxpayer. If there is no net income, there is no sharing with the Government (i. e., no income tax payment).

The thoughts outlined above are clearly supported by the income tax regulations. We do not infer that

all tax regulations constitute sound or logical bases for industrial accounting practices. But practically every regulatory body, and more recently the constituted code authorities, have given endorsement to these views.

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Inventory. Why wait until January first to take, or check, physical inventories? It is often feasible to have this task handled at earlier month-end periods, thus relieving the confusion and delay in closing at the end of the year.

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Hartford Chapter Meeting. The monthly meeting of the Chapter will be held on December 18, 1934. It will be devoted to the topic "Cost Accounting for Rubber Products." Mr. J. J. Wrinn, of the Good-year's India Rubber Glove Manufacturing Co., Naugatuck, will be the speaker. There is a standing invitation to members of the Manufacturers' Association to attend the Hartford Chapter, N. A. C. A., meetings.

Transportation

U. S.-Canadian Freight Charges. By an order of the Board of Railway Commissioners for Canada, Canadian railroads were required, starting November 1, to file tariffs, including advance charges payable to United States carriers when U. S. money is at a discount of $\frac{7}{8}$ of one percent or more under Canadian money. Tariffs regulating surcharge arrangements when U. S. money is at a premium over Canadian money, have been in effect since 1921, and because of a marked change in the situation, it was believed necessary to establish a new regulation in order to make the "principle work both ways".

These adjustments have been published in Agent Ransom's Tariff No. 16-D, on behalf of the railroads and will be mailed to any member concerned interested in receiving them, as lack of space will not permit their reproduction here.

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National Industrial Traffic League Meeting in New York. At its most recent meeting, the National Industrial Traffic League reversed its position and now favors reasonable and logical regulation of highway transportation for hire, both as to rates and services. The vote was close, being 58 in favor of regulation and 55 opposed, the position which the League had held previously.

In addition to this general statement, 17 additional provisions were adopted dealing with the extent and manner in which motor carriers might be regulated. The Highway Committee recommended regulation by a separate commission to be known as the Highway Transportation Commission, but the League finally went on record as favoring regulation by a division of the Interstate Commerce Commission.

Norris W. Ford, traffic manager of the Association, was present at the meeting during the first two days, November 14 and 15.

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Safety Laws Urged by Lee. Speaking recently before the National Association of Railroad and Utilities Commissioners, William E. Lee, chairman of the Interstate Commerce Commission, stated in part, "I am firmly of the opinion that there should be legislation that would bring about a proper restriction of the length, height, width and weight of motor vehicles, a limitation of the number and size of trailers and, probably the most important of all, a requirement that only qualified and experienced drivers be permitted to operate properly equipped and regularly inspected motor vehicles under limitations of reasonable hours of service."

Besides his concern over the safety of life on the highways, Mr. Lee stated further that the regulation of trucks would not wholly cure the ills of the railroads, for they are suffering primarily from a scarcity of traffic.

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Ship Lines Join Conference. American shipping interests agreed on November 13 to cooperate in the preliminary international negotiations intended to curtail the volume of merchant tonnage in service. John McAuliffe, president of the Isthmian Steamship Company, was named as chairman to appoint delegates to a meeting to be held in London sometime in January. It is expected that this meeting will draft the agenda of a later meeting at which the entire subject will be considered by ship lines of all nations.

To a previous invitation, American lines had replied in the negative, but finally agreed to enter the negotiations on condition that subsidies and intercoastal and coastwise tonnage would not be considered.

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New Haven Head Names Two Assistants. Howard S. Palmer, newly elected president of the "New Haven" road, recently named Harry W. Dorigan and W. W. Meyer as Assistants to the President, the latter to assist in legal and financial matters. Mr. Dorigan, who has been with the road for the past 20 years, has been assistant to Mr. Palmer since 1930 while the latter was comptroller and vice-president. Mr. Meyer, who has been with the road for 19 years, has been assistant general counsel since May 1, 1931.

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Drummond Given New Post. A. A. Drummond, assistant freight traffic manager of the "New Haven" road, has just been made the road's first sales traffic manager, according to an announcement made by F. J. Wall, vice-president, on November 18. Headquarters of the new department, which has been established to unify selling of all forms of transportation, will be in Boston. Through Mr. Drummond's office will be sold both freight and passenger transportation produced by the coordinated services operated by the railroad, steamship lines, motor trucks and motor coaches.

Foreign Trade

New Drive for Foreign Trade. Pleased with the recent assurances of cooperation of banking interests, the government under George N. Peek, the President's foreign trade advisor, is now said to be perfecting plans for an expanded drive to enlarge America's foreign trade. The first move announced in this direction is a series of conferences with a powerful committee of the American Bankers' Association, starting on November 22 in Washington. Mr. Peek has suggested appointment of several committees from manufacturing circles and is also seeking other cooperation from exporters, farmers and industrialists.

Heading the list of projects under consideration to aid American exporters is credit insurance, patterned somewhat after the smooth working British plan whereby exporters pay small premiums for assuring risks and delays necessary in financing foreign trade. Mr. Peek is expected to go before Congress this winter seeking power and funds to set up this insurance program.

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Credit Restrictions Dropped. Requirements that treasury permission be obtained for all shipments of currency and transfers of credit abroad was eliminated on November 12, and in its place was substituted one that provides for the reporting to the nearest federal reserve bank of dealings in sums exceeding \$5,000 per week. The decision to lift the restrictions was predicated on the discovery by the Treasury Department that private dealings were not interfering with stabilization plans.

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Leather Sales Observations. British kid leather tanners are now dominating domestic market, showing production of 40% greater than ten years ago.

During the post war years the United States, the United Kingdom, Germany and France accounted for about 85% of the world's leather production, but in 1933 produced only 57% of it. A study of the trend shows that production has spread in Spain, Belgium, the Netherlands, Greece, Brazil, China, Argentina, Uruguay, Japan, Australia and the Union of South Africa. However, despite these gains in domestic production in the countries just named, there is a good demand for U. S. quality leather belting in Argentina. U. S. patent leather has also gained in India, Spain and Peru during 1933.

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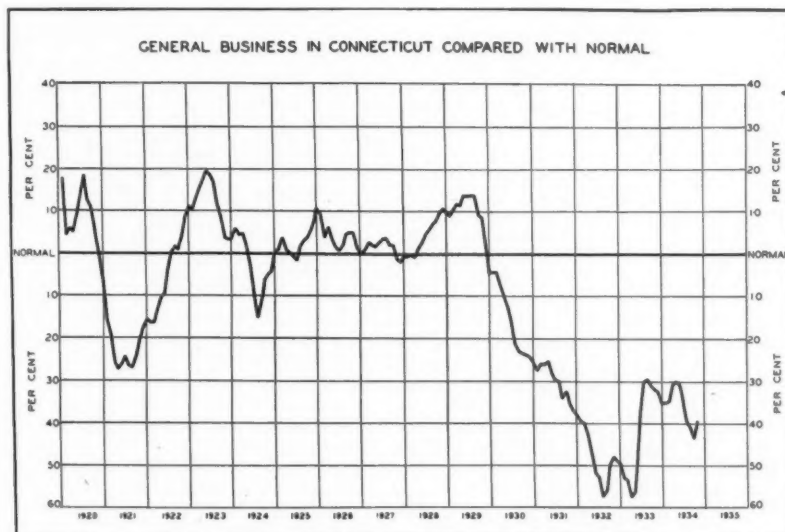
Export Possibilities for American Shoes. In the opinion of Julius Schnitzer of the Commerce Department's Leather-Rubber-Shoe Division, a greater volume of low-priced American shoes can be marketed abroad if proper attention is given to the task by manufacturers of the cheaper grades. Mr. Schnitzer states that the possibilities for low-priced shoe exports are brightest in non-industrial countries, such as Palestine, Syria and various other countries in the Far East.

BUSINESS PATTERN

General Summary. During October, general business activity in Connecticut rose four points over the September level and was almost two points higher than in August. The primary reason for the sharp upturn was, of course, the resumption of activity in textile mills following the strike in September, the index of cotton mill activity rising to 28% below normal in October compared with 66% below a month earlier. Nevertheless, other indicators of the trend in general business also advanced during the month. The number of man hours worked in five cities increased in excess of the usual seasonal percentage and factory employment in cities other than those dominated by textile mills also expanded.

The New York Times weekly business index has continued to advance slowly and has suffered only one setback during the past eight weeks. The level for the first two weeks in November was higher than the October average.

During the four weeks ended November 10, the index of wholesale commodity prices compiled by the U. S. Bureau of Labor Statistics remained relatively stable, the average price level at the end of the period being less than $\frac{1}{2}$ of 1% higher than at the beginning. The prices of food products advanced $1\frac{1}{2}\%$ during the interval, miscellaneous items 1% and hides and leather products $\frac{1}{2}\%$. Textile products declined 1% during the four weeks



Freight car-loadings originating in fourteen Connecticut cities rose for the second consecutive month, and metal tonnage carried by the New Haven Road and bank debits to individual accounts in three cities also stood at a higher level than in September. Data for the first part of November are very limited but indicate continued improvement in general business activity.

In the United States, general business also rebounded sharply due to the increased activity in textile centers. Consumption of cotton and silk advanced to well above the August level and weekly reports for the first part of November point to some further expansion. Production of iron and steel increased moderately in October and electric power output was also on the increase. However, freight carloadings and automobile production declined substantially, the falling off in the latter being due to the discontinuance of production of the 1934 models and the preparation for the production of the 1935

and all other groups of commodities showed only minor changes.

Retail prices as measured by the cost of living index of the National Industrial Conference Board in October were approximately the same as in September and $3\frac{1}{2}\%$ above October, 1933. A decrease of about 1% in retail food prices was largely counteracted by small increases in the prices of rent and sundries.

Finance. The number of business failures in Connecticut and the net liabilities of bankrupts during the four weeks ended November 10, declined 14% and 56% respectively from the corresponding period a year earlier. The number of new corporations formed and the total authorized capital stock fell 11% and 23% below last year. The aggregate value of mortgage loans continued at a high level and well above a year ago but the number of real estate sales reported was lower. October sales of new ordi-

nary life insurance experienced a larger than seasonal rise over September and exceeded last October by 8%.

Construction. In Connecticut, October and early November were marked by a contra-seasonal increase in both the number and value of building permits issued. Permits for repairs made under the Federal Housing Act were undoubtedly responsible in part for this improvement.

In the United States, the value of building contracts awarded in October rose substantially over September, the value of contracts for new residential structures advancing 29% on a seasonally adjusted daily average basis. Although the October total was 10% below October, 1933, the reduction was due entirely to a drop of 32% in the public work classification. Residential building increased 18% over a year ago and all other building, including commercial and industrial, rose no less than 36%.

Labor and Industry. Manufacturing activity in Connecticut factories expanded more than seasonally in October, the index of the number of man-hours worked advancing to 36.7% below normal compared with -37.2% in September and -32.7% in October, 1933. Plants in Bristol and New Haven experienced a larger than seasonal increase over September in the number of man-hours worked. In Bristol, activity was 5% above last year while, in New Haven, activity was 5% lower. In Bridgeport concerns, man-hours worked were unchanged from a month previous but 6% below a year earlier. In New Britain, manufacturing operations decreased contrary to the usual seasonal trend and declined 17% from a year ago. Employment in 751 Connecticut manufacturing establishments increased 10% in October over September due largely to the resumption of activity in cotton textile mills. However, total employment was the highest for any month since June. Factory payrolls also rose sharply in October and were also at the highest level since June.

Employment and payroll totals for the United States as a whole were affected by the same influences as in Connecticut, large increases being reported following the termination of the textile strike.

Trade. Sales by department stores increased seasonally in October and on a daily average basis were 7% higher than a year ago. Inasmuch as the price level has changed only slightly during the past twelve months, the gain over last year represents a definite expansion in the physical volume of goods moved.

Transportation. The index of freight car-loadings originating in Connecticut stood at 48% below normal in October compared with 49% below in September. Car-loadings of building materials increased slightly and were 30% higher than in October, 1933. Shipments of bituminous coal and of merchandise in less-than-carload lots also rose but loadings of automobiles fell off in line with decreased automobile production.

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RUBBER

(Continued from page 9)

ber Company was organized as a subsidiary to supervise the purchase, importation and sale of crude rubber. The next year the Rubber Goods Mfg. Company (a group of eight companies including Hartford Rubber Works) was acquired, giving the United States Rubber Company the largest tire making unit then in the country and extending their representation to all fields of rubber manufacture. Other plants still in operation which were acquired at that time are the Detroit and Indianapolis Tire plants and the Passaic mechanical goods plant. Next steps in the construction of America's No. 1 rubber giant were: acquisition of controlling interest in Canadian Consolidated Rubber Company, Ltd.—producing rubber footwear, mechanical goods, clothing and tires—now operating on larger scale as the Dominion Rubber Company; establishment in 1910 of a rubber plantation in Sumatra and in British Malaya (a few years later 135,053 acres—70,000 acres in bearing trees) operated since 1917 by United States Rubber Plantations, Inc., with stock owned by the General Rubber Company; purchase of the Naugatuck Chemical Company—established in 1904 to produce sulphuric acid for sale to the reclaiming plant also operated by U. S. Rubber Company in Naugatuck (now known as Rubber Regenerating Company) and which was subsequently expanded to produce a full line of chemicals for use in the rubber and other outside industries; acquisition of the Rubber Regenerating Company in 1912 with plants at Mishawaka, Indiana, and Manchester, England; establishment of a Development Department, also in 1912, with the General Laboratories in Passaic, N. J., and the Textile Laboratories at Orange, N. J.; organization of United States Rubber Export Co., Ltd., in 1914 to handle export business of all subsidiaries; purchase of Winnsboro Mills in Winnsboro, S. C., in 1926 to produce cotton cord for tires; acquisition of control of Samson Tire and Rubber Corporation, Los Angeles, and the Gillette Rubber Co., Eau Claire, Wis., in 1931; and the purchase of two cotton mills in Hogansville, Ga., and Shelbyville, Tenn., in 1933.

Chief products of the company made in Connecticut are rubber shoes and overshoes, Keds, gloves, chemicals and fire hose. Elsewhere the U. S. Rubber Company produces tires, rubber household goods, all types of mechanical goods and sporting goods, including thousands of different items in all branches of rubber manufacture.

The brief histories of the rubber manufacturing companies in Connecticut who are now within the fold of the United States Rubber Company empire are recorded in the following paragraphs.

L. Candee & Company

This company, once New Haven's largest rubber producer of boots and shoes, has been completely absorbed by the United States Rubber Company and since 1930 its plant has been closed with part of its equipment being moved to Naugatuck and the remainder sold, as well as the buildings. It was

the outgrowth of the early experiments in rubber made by Leverett Candee and Ralph B. Steele of New Haven in a small Hamden factory in 1838. Mr. Candee, once a wealthy man who had lost his fortune, became interested in the possibilities of the rubber industry and with Ralph B. Steele, acquired the Goodyear license of Nathaniel Hayward when Goodyear had failed to pay Hayward \$1000 in accordance with the terms of an agreement entered into April 3, 1841. This Goodyear license acquired by Hayward was released to Steele and Candee August 22, 1843. Hayward's services were also secured. About ten days later, Goodyear himself gave a sweeping license to Steele and Candee to manufacture shoes under his patents.

With all possibility of interference aside after the acquisition of these two licenses, L. Candee and Co. was organized September 5, 1843, with Henry and Lucius Hotchkiss, two New Haven lumber dealers, as the chief financial backers. The following year Abraham Heston took a sizeable share in the business. In 1852 a joint stock company was formed with a capitalization of \$200,000, which in 1869 was increased to \$300,000. But in the meantime—1863—Leverett Candee had sold his interest to Henry Hotchkiss. From that time the Hotchkiss family has been most prominent in the rubber industry, Henry L. Hotchkiss, son of Henry, being president and treasurer of the L. Candee & Co. prior to its entrance into the U. S. Rubber family in 1892 and subsequently a director of U. S. Rubber. His son, H. Stuart Hotchkiss was a vice-president of U. S. Rubber in charge of the corporation's crude rubber activities.

Goodyear Metallic Rubber Shoe Company

When Goodyear's experiments, after his discovery of the vulcanization process, had reached a point where success seemed certain, William De Forest, who had previously loaned money to Goodyear, now offered to back him up to \$50,000. De Forest was a shrewd trader and owner of a woolen mill in Naugatuck. He was successful in convincing Goodyear that Naugatuck with its newly constructed dam furnishing ample water power was an ideal place to start the manufacture of the rubber goods. So he, together with members of the Lewis family—prominent in Naugatuck and related to the Goodyears by marriage—formed Samuel J. Lewis & Co., a textile company, which started manufacturing rubber shoes in 1843, which shortly became known as the Goodyear Metallic Rubber Shoe Co.

Stockholders in this company, besides De Forest were: Milo Lewis, his son, Samuel J. and Wm. H. Elliot. This concern produced shoes from the start and was next in line to L. Candee to receive a Goodyear license. Goodyear himself refused to enter actively into the company as he preferred to perfect new processes. He was so anxious to have the uses for rubber increased that he usually stipulated to licensees that experimental work should be carried on. In his memoirs he bemoans the fact that the management of Goodyear Metallic Rubber Shoe did not follow out his plan but were content to devote all energies to one type of manufacture once they had discovered there was a profit in it. Now

all shoe operations of U. S. Rubber are concentrated in Naugatuck at the Goodyear Metallic Rubber Shoe and Goodyear India Rubber Glove plants (latter strangely producing shoes as well as gloves) where about 50% of the domestic supply is produced.

Goodyear India Rubber Glove Company

The manufacture of gloves under the Goodyear license was assigned to the Litchfield Rubber Company, which is explained by the fact that Samuel J. Lewis was then engaged in the manufacture of mittens and gloves of yarn, cloth, skins, furs and leather in Litchfield. Shortly afterward he got out of the Litchfield Rubber Co. to devote all of his time to shoe manufacture in Naugatuck. The Litchfield Rubber Company shortly afterwards became the Goodyear India Rubber Glove Mfg. Company, moving to Naugatuck.

Fabric Fire Hose Company

Tomlinson, of Naugatuck, who had married Goodyear's sister, thought there was money to be made in manufacturing rubber clothing and accordingly secured a license from Goodyear to produce it in Sandy Hook, Newtown, Connecticut. Failing after two years in the rubber clothing business, he was succeeded in 1846 by the New York Belting & Packing Company (U. S. Rubber subsidiary since 1900) which produced belting, packing and hose. After the New York Belting Company removed headquarters in 1900 to Passaic, N. J., operations were started by a number of the workmen who preferred to remain in Sandy Hook rather than move to Passaic. Because its chief item of manufacture was fire hose, it has since been known as The Fabric Fire Hose Co., another subsidiary of U. S. Rubber Co.

Hartford Rubber Works

Although no longer in existence under this name, having been closed by its owners, the U. S. Rubber Co. in 1929, and its equipment moved to the company's Detroit tire plant, its history is significant in the annals of rubber manufacture in Connecticut. First organized by John W. Gray of Hartford as the John W. Gray Co. in 1881, to produce all kinds of articles produced wholly or in part of rubber, its initial products were druggists' sundries.

Within four years the company built solid rubber tires for Hi-Wheeled bicycles and in 1888 incorporated as the Hartford Rubber Works. In 1891 the company produced the first single tube tire, after which it was taken over by the Pope Mfg. Co. (bicycle manufacturers) and the stock increased from \$20,000 to \$200,000. By 1897 solid tires were made for carriages and wagons and within two more years the solid tire which later became U. S. Rubber Company's solid motor tire No. 1, was brought out. The same year (1899) the Rubber Goods Mfg. Co.—a merger of several companies specializing in tires—became the chief stockholder. In 1900 the first "straight side" auto tires produced in the country were made at the plant (Dunlop's invention). Some of the notable contributions made by this plant to the rubber industry were: first anti-skid auto tire, known as "Burley Tread" which was

produced under license; the "Midget" tread, quick detachable type tire; chain tread; Hopkinson Flat Band method of tire manufacture, now the standard for the industry—(U. S. Royal Cord first made by this principle in 1917).

During the war gas masks and rubber coats were produced. At the peak of operations, this plant had the capacity to produce 10,000 to 12,000 tires a day and employed around 3,000 persons. For 30 years prior to the loss of its identity as a part of U. S. R.'s Detroit plant, Charles B. Whittelsey, now Executive Vice President of the Hartford Chamber of Commerce, served in various executive capacities, being president and vice president and general manager.

Managements of the U. S. Rubber Company in charge in Connecticut are: W. T. Cole, General Manager, Fabric Fire Hose Company, Sandy Hook; Walter H. Norton, Factory Manager, and Charles T. McCarthy, Treasurer, of the Goodyear India Rubber Glove Company and the Goodyear Metallic Shoe Company, both at Naugatuck.

Seamless Rubber Company

Babies in England pulled first on seamless rubber nipples. A man named Collins, a druggist, is said to have reported this English advance to Mr. C. E. Langdon of New Haven, who thought so well of the idea that he decided in 1877 to be kinder to the tongues and mouths of U. S. babies who had previously contented themselves with the molded ridged variety. From that simple start came the development of the largest plant in the world devoted exclusively to the manufacture of sundries—the Seamless Rubber Company, now a subsidiary of United Drug Co. of Boston.

In the early days, bankers were forced to take stock for the money they loaned. Subsequently as the line grew to cover a larger number of sundry items than its competitors, the company grew rapidly. Then, as often occurs, an official of the company was sold the idea of making tires of the "sewed variety"—a product entirely foreign to the plant managers and not adaptable to plant equipment or arrangement. Thousands of tires were turned out only to come back deflated after a few hundred to a thousand miles on a test car, or a short distance on a private car. The sewed part of the tire casing was found to have worn out the tubes. But so weakened was the original company's finances after this bitter experience that it never recovered from the blow, despite the discontinuance of tire manufacture.

In 1917 the assets were sold to the United Drug Company which has since expanded operations and built a new plant (1920) which now supplies the rubber goods to 10,000 Rexall and Liggett stores (affiliated with the holding company. Seamless also distributes its products to jobbers, department stores, syndicates, chain stores and through sales outlets in 64 foreign countries. Normally 1,250 persons find employment at the spacious plant on New Haven harbor, a few blocks below the "New Haven" railroad depot. Products of the company run into the thousands but the broad basic lines are chiefly as follows: Druggists', physicians' and hospital rub-

ber goods; household rubber goods; industrial rubber goods; rubber goods for sports use, adhesive plaster; hard rubber combs; bathing caps; toy balls; rubber bands. A few of the thousands of items coming under these broad headings are: rubber bathing suits, play balls, footballs, basketballs, hot water bottles, surgical gloves, medicine droppers, heating pads, industrial gloves to withstand acid, lineman's gloves to withstand the current of high tension wires, rubber tape for use in connection with spraying paint on cars.

Officers of the Seamless Company are: Thatcher Lane, president; W. C. Hutton, vice president and treasurer; W. Delaney, vice president and factory manager; Edward M. McDonald, secretary and assistant treasurer. Louis K. Liggett is president and founder of United Drug Co., which owns Seamless.

Armstrong Rubber Company

Never a large producer of tires and tubes or one to seek fame, or hazard by a concentrated drive toward that goal, the Armstrong Company is the outgrowth of the combined business philosophy of two men, James A. Walsh, its president, and Fred Machlin, treasurer. A worker in the plants of a number of rubber tire manufacturers until 1912, Mr. Walsh had an idea that he could make a success of rubber tire manufacturing by adhering to the principles of good workmanship, and by being the first in the industry to place an unconditional guarantee upon his products. This guarantee is in effect a written contract between the company and the purchaser against loss of service or failure of Armstrong products. It assures him a definite number of months of service. He began to prove that his idea was sound by starting to manufacture tires in a small loft in Newark in 1912 at a time when 500 manufacturers sold in the same field. That his original manufacturing plan and selling policy was correct is proved by the fact that only about 32 manufacturers are left in the business, of which several are operating in receivership and others on the "ragged edge". But Armstrong, despite the ruthless competition of the past five years, is to be found among those enjoying the highest credit rating.

From the small loft the Armstrong Tire Co. soon expanded into its own plant in Garfield, N. J., and in 1922 purchased a plant in West Haven, Conn. Its present capacity is 2500 tires and tubes a day, now sold through its own one-discount independent dealer organization. Armstrong's latest and most outstanding tire offering is its Air Coaster tire, the name being given to it because of its generous oversize, its unusually flat tread and deep non-skid design—all combined to overcome the tendency toward rapid and uneven wear prevalent in all tires in use today on small speedy cars with fast braking, quick acceleration and sustained high speed.

And so this team of Mr. James A. Walsh as president who has been responsible for producing a quality tire and Mr. Frederick Machlin as secretary-treasurer and general sales manager, whose sales ability has found a market, has promoted one of the most successful units in the tire industry in the period of greatest competition.

Norwalk Tire & Rubber Co.

Looking with a weather eye toward the fertile New England market, Mr. W. B. Miller, a resident of Connecticut, one of the founders of the Diamond Rubber Co. of Akron, and its secretary and general-manager until absorbed by B. F. Goodrich in 1913, established the Norwalk Tire and Rubber in March, 1914. It was started in Connecticut in order to avoid the necessity of paying heavy transportation charges on crude rubber to the Middle West and on finished goods from the Middle West to New England while attempting to gain a good slice of the New England market.

At the start, the company specialized in treating different types of rubber under its own patent No. 1503430 to insure greater uniformity. It did this not only for its own production department which first built inner tubes, followed a few months later by tires, but also for a number of other rubber goods manufacturers. Until 1932, Norwalk Tire & Rubber Co. manufactured tires and tubes exclusively, but in that year began to produce batteries, and are now licensees under U. S. Patents No. 1897066, Feb. 14, 1933, and No. 1956870, May 1, 1934. Claims for superiority of these batteries are based on better and more rigid assembly of plates; patented more rigid post construction and superior alignment of plates which prevent cracked separators, short circuits or dead cells.

In the latter part of 1933 the company started to manufacture fan belts, radiator hose and early this year installed machinery to retread sound tire carcasses (outer casings). Today, Norwalk's business is divided between its different lines approximately as follows: 55% tires and tubes; 12½% batteries; 12½% reconstructed tires and retread stock for reconstructing tires; and 20% fan belts and radiator hose. Its production moves through jobbers and automotive parts dealers, 70% being sold in New England.

Officers of the company are John W. Whitehead, president; William K. Valentine, treasurer; Louis P. Arnold, vice president, and Harry C. Miller, secretary.

Goodyear Rubber Company

Another company, reputed to have obtained a license to manufacture from Goodyear even before L. Candee & Company, of Hamden, and Goodyear Metallic Rubber Shoe Company but which did not start to produce goods quite as early, was the Naugatuck Rubber Company. This company manufactured shoes, druggists' sundries and Army and Navy equipment receiving a large amount of business in the first and last two categories because of the Gold Rush of '48 and the Civil War. During the Civil War the company was known as the Phoenix Rubber Company and later the Union India Rubber Company, which was subsequently moved to Middletown. According to one set of records, the Union India Rubber Company then became the Goodyear Rubber Company, manufacturing the "Gold Seal" line of rubber footwear. Another basic source of information which does not contain a complete chronology has it that the original company was organized in New York in 1872

by F. M. Shepherd and J. A. Minott, two New York men, later being moved to Middletown and incorporated in 1876. In 1926 the concern was taken over by the banks and in 1929 a new company was formed with Harold S. Guy as president; A. V. McDowell, vice president; C. M. Park, treasurer and general manager; and P. E. Reilly, secretary and assistant treasurer.

One fact is certain, that the company's "Gold Seal" trade mark dates from 1872 and that regardless of reorganizations it has been religiously guarded as a mark of quality on rubber footwear.

The Sponge Rubber Products Company

In the early part of 1923, three men formerly employed by another Connecticut rubber company (F. M. Daley, William R. Todd and L. D. Smith) formed the Sponge Rubber Products Company and started the manufacture of sponge rubber play balls. Finding a highly competitive market for their higher priced ball, the company was forced to produce one to sell in ten cent stores before orders were received in volume. Then in 1925, crude rubber started to sky-rocket from 25¢ per pound to 50¢ and all the way up to \$1.25 per pound; it seemed impossible to continue manufacture, because practically the entire output was being sold to syndicate stores to be resold at 10¢. But necessity forced a little concentrated research which made it possible to continue manufacture even at the highest crude rubber prices. The knowledge gained in a rising market produced a good profit in a falling one.

Needing more manufacturing space than was available in the old plant formerly occupied by the Seamless Rubber Company in New Haven, the company finally purchased the so-called Bassett plant at Derby. About a year later expanded activities required additional space and another factory was purchased in Shelton. It now employs around 125 persons.

Although the rubber play ball is the company's so-called bread and butter line, it has made and sold millions of the return type of rubber ball with rubber thread attached and countless other items, including bath sponges, soap dishes, chair cushions, arm rests for automobiles, rubber pillows for hospitals, toys, etc. (other items mentioned under description of sponge rubber manufacture in previous paragraphs). The uses for the product seem to be limitless, as almost every mail brings suggestions for new uses. One of the most recent uses is that of quietizing typewriters which is now being applied with success by one of the younger companies in the typewriter field.

The present officers of the company include the three men who originally started the Sponge Rubber Products Company ten years ago: F. M. Daley is president; William R. Todd, secretary-treasurer; L. D. Smith, vice president.

Goodyear Rubber Sundries

This company was founded in May, 1919, by Messrs. J. A. Murray and J. A. Murray, Jr., the former being connected with the Seamless Rubber Company for 33 years, working his way up from

office boy through practically every key position until he was vice president and general manager. Mr. Murray took over the old Seamless Rubber plant in New Haven and has been producing a line of rubber sundries similar to that of Seamless since 1919. Its brands go by numbers such as Goodyear No. 60 or No. 20.

Normally, Goodyear Rubber Sundries employs between 400 and 500 persons. J. A. Murray is president and J. A. Murray, Jr. is vice-president and secretary.

Omo Manufacturing Company

This company was originally started in 1893 by Henry H. Francis, one time manager, Hartford Rubber Works and D. M. Baldwin, whose family was associated with one of the Bridgeport rubber companies. At the start, the company was known as the Middlesex Rubber Works, but within two years after its organization the name was changed to the Omo Manufacturing Company (Omo designates bone in shoulder nearest to dress shield). Its first products were rubber dress shields, dental dam (gum) and bicycle tires. The dress shields made their claim for popularity because they were odorless, being made from "balata" gum with an inner lining.

Seeing a potential market outside this limited field, Omo began manufacturing infants' pants, bibs, sanitary garments, crib sheets, tourists' cases, household aprons, lap pads, rubber diapers, coats, capes and mending tape. In recent years the company experienced financial difficulties and was taken over in October this year by new management who have had long experience in rubber manufacture, and now operate the Columbia Combining Co. in New York.

Under the new management, the company plans to produce, in addition to its other lines, shoe fabrics, rain coat cloths, hospital sheeting, corset fabrics, gum rubber cloth, and rubber cement in large quantities. The plant is now being enlarged to provide the necessary space for the new manufacturing operations and plans are said to be completed for the construction of a new building to be used for the manufacture of rubber cement. When alterations and the new factory are completed, the company expects to employ around 200 persons or more than ever before in its history.

The present officers of the company are: James J. Colt, president; Herman Epstein, vice-president; Martin Schnur, secretary; Frank E. Ferree, auditor and office manager. Directors are the officers and Graham Seddon and Frederick B. Fountain, former president and treasurer.

In dollars and cents production of today Connecticut does not compare favorably with the totals of the Akron rubber center, but its earlier contributions and its present diversification give it a high rank among rubber producing areas of the nation.

Editor's Note: Lack of space in this issue will not permit the inclusion of the brief histories of The Canfield Rubber Co., and Jenkins Brothers of Bridgeport, Conn., and mention of still other small concerns whose histories have not been available. These will appear in the January issue.

Whether **YOUR** need is for

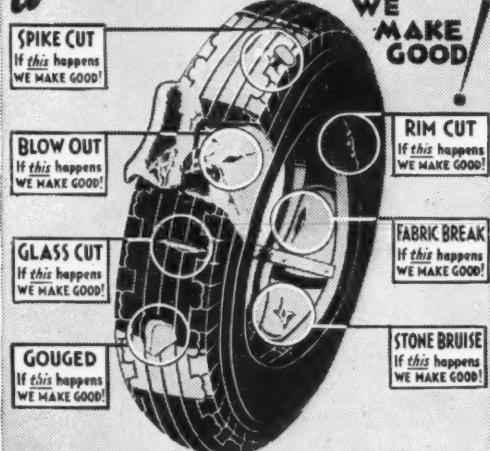
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Armstrong tires are sold exclusively through Independent Dealers. There is an Armstrong Dealer in every city, town, and community in Connecticut. Give him your tire business. You will find his service neighborly and his prices reasonable, not only for tires, but for all other lines with which he is prepared to serve you.

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Manufacturers of ARMSTRONG INSURED TIRES and TUBES . . . BATTERIES

SERVICE SECTION

On account of space limitations, the material and used equipment items offered for sale by Association members have not been classified by sizes or usage best adapted. Full information will be given on receipt of inquiry. Listing service free to member concerns.

●● Materials for Sale

COLD rolled steel in coils and in squares, condulets and fittings, remnants of covering materials—velours, velvets, mohair, tapestries, denims, chintzes, and cretonnes, semi-finished and cast-iron; new shaft hangers, brass wire, brass rods, aluminum tubing, cold drawn steel—mostly hex; miscellaneous lot of material used in the manufacture of molded rubber parts and flooring, knife switches—new and many sizes; carload C. I. drop bases, No. 1025 steel in sizes 4" x 2" and 6" x 2"; lead pipe, lead sheet, acid proof pipe fittings, 124 bars screw stock varying thicknesses and lengths, white absorbent tissue process from cotton, rotary convertor, colors and dyes—large variety, lacquers—several hundred gallons in assorted colors; and soft anneal copper with high silver content in rolls. J. H. Williams wrenches in assorted sizes.

●● Equipment for Sale

ACCUMULATORS, annunciators, baskets, beaders, beamers, bearings, belt stretchers, blowers, boilers, braiders, bronze runners, cans, cards, woolen; car loaders, chain, chairs, chamber, clocks, time recorders; clock systems, colors and dyes, compressors, condulets, converters, conveyors, cookers, cooking utensils, doublers, draftsman's table, drop hammers, drops, board; drums, drying racks, dyes, engines, evaporators, extractors or percolators, fans, filtering carbon, folders, forming rolls, frames, furnaces, gears, generators, grinders, grindstones, grinding wheels, guiders, headers, lamp shades, lathes, lifters, looms, De Laski circular; machines, automatic; machines, calculating; machines, compressing; machines, dieing; machines, drilling; machines, filing; machines, filling; machines, folding; machines, knitting; machines, mercerizing; machines, milling; machines, pipe-cutting and threading; machines, pleating down; machines, riveting; machines, screw; machines, threading; machines, tongue and groove; machines, washing; mercerizer equipment; millers, mixers, mills, mills rubber; mixing rolls, motors, oil circuits; oven drawers, paints and lacquers; panels, planers, plungers, pointers, presses, profilers, pulley drives, pumps, reamers, receivers, rheostats, safe cabinets, saws, scales, vreens, seamers, shapers, shears, spindles, spinning mules, steam tables, steam warmers, stitcher, 192 monitor corner box switches, tables, tanks, toilet equipment, trucks, ash can; tube closers; wire, wire screw and yarders.

●● For Sale or Rent

FOR SALE. One 3½ Bliss toggle press in good condition. Address S. E. 76.

WANTED TO SELL—LEATHER SCRAP. Connecticut manufacturer of leather belting has constantly a large supply of leather scrap for sale. Address S. E. 78.

FOR SALE—1 Brush expander for cleaning 3" tubes; 1 Clinker Rake; 2 Straight Bars; 3 Valve Forks; 1 Stice Bars; 1 Fire Hoe; 1 Large 60 lb. gauge; 1 Large 180 lb. gauge; 1 Small 200 lb. gauge; 2 #5 Bigelow H.R.T. Boilers with overhanging fronts, 53 BHP, 526 square feet of water heating surface, 48" D, 13½" long, 50—3" tubes 12' long; 33, 3" x 14" Boiler tubes; 2, 4" Gate Valves; 2, 4" Non-Return Valves; 2, 3" Pop Valves; 2 Water Columns Complete with Valves—but no glasses; 2, 2" Blow-off Valves; 3, 1½" Check Valves; 2, 1½" Gate Valves; 1, 1¼" Check Valve; 3, 1¼" Gate Valves; 1, 1¼" Globe Valve; 2, ¾" Globe Valves; 2, ¾" Gate Valves; 1, ½" Globe Valve; 1, 2" Check Valve; 1, 2" Gate Valve; 2 complete sets of ash and firedoors with rings and mountings; 2 cast breeching connections (to fit front of boiler); 2 cast arches. Address S. E. 79.

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ELECTRICAL AND INDUSTRIAL ENGINEER. Young man, graduate M. I. T., B.S. and M.S. in electrical engineering. Experience in manufacturing and production research and development cost and time study, industrial engineering and plant layout. General Electric trained. Former chief engineer for Connecticut manufacturer. Considerable experience in research and development of new products of electrical or mechanical nature as well as purchasing and engineering sales. Excellent mechanical and electrical experience. Desires position as engineering or manufacturing executive; development or research engineer, plant engineer or purchasing. Excellent references. Address P. W. 268.

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bill with 52 offices located in principal cities everywhere, from which policyholders receive the direct personal attention of salaried representatives.

Insure with one of the strongest and largest liability companies in the world — American Mutual—the pioneer mutual casualty company. 96% of our policyholders renew every year. Call on our nearest office for an analysis of your insurance problems. One of our men will be glad to survey your needs without obligation.



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Liabilities: \$13,586,305.48

Surplus to Policyholders: \$3,705,931.58

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